

DICOM

Conformance Statement

Software Version 1.1

Disclaimer:

These specifications are subject to change.

Unetixs Vascular Inc. reserves the right to change these specifications without prior notice.

1. Document History

Rev	Date	Author	Comments
1	05/12/03	R. Doehrmann	Created

2. Introduction

This document defines the DICOM conformance of Unetixs Vascular Inc. MultiLab Series II - LHS equipped with DICOM Mach I. This DICOM Conformance Statement is not intended as a complete product specification.

2.1. Source of Information

ACR-NEMA Digital Imaging and Communications in Medicine, DICOM V3.0, 2003

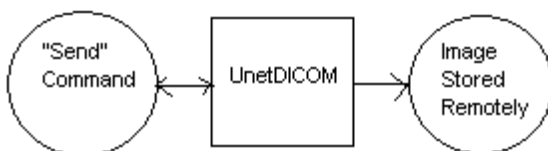
2.2. Acronyms and Abbreviations

ACR	American College of Radiology
AE	Application Entity
ANSI	American National Standards Institute
DICOM	Digital Imaging and Communication in Medicine
NEMA	National Electrical Manufacturers Association
PDU	Protocol Data Unit
SCP	Service Class Provider (server)
SCU	Service Class User (client)
TCP/IP	Transmission Control Protocol/Internet Protocol
SOP	Service Object Pair
UID	Unique Identification

3. Implementation Model

The DICOM Mach I system consists of two executable applications – one to configure system settings and another to actually handle image transfers.

3.1. Application Data Flow Diagram



3.2. Functional Definitions of AE

3.2.1. Network Storage AE

The DICOM Mach I configuration application is used to configure network options. Options include the Service Class Provider (SCP) Application Entity (AE) title, IP address, port number, and timeout. A more complete description of these configurable items is defined in Section 8 of this document.

The Series II software sends images to the host via the DICOM Mach I application.

Transfer is initiated from the Series II software Export screen by selecting either “Export Page”, “Export Patient”, or “Export All”. Each Image is transmitted using the C-STORE standard. DICOM Mach I provides feedback to the user indicating image status. Feedback will indicate a successful image transfer or error message. The studies generating the images are not deleted at the Service Class User (SCU). It is the responsibility of the user to archive studies after image transfer is complete.

3.3. Sequencing of Real World Activities

The system is configured with SCP and SCU information.

Study(s) are completed prior to transfer initiation.

Image(s) are transferred to the SCP. Transfer syntaxes are negotiated each time an image is transferred.

A study may be transmitted or re-transmitted to the SCP as needed. Once the study is archived it is no longer available for transfer.

4. Network Transfer Specifications

4.1 Network Storage AE Specification

The Network Storage AE conforms to DICOM V3.0 SOP Classes as an SCU.

SOP Class Name	SOP Class UID	Role
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	SCU

4.2. Association Establishment Policies

4.2.1. General

Maximum PDU size is configurable from 16k to 64k.

4.2.2. Number of Associations

DICOM Mach I utilizes one association at a time for network storage. Since only one storage destination can be specified, there can be no more than one open association at a time from the Network Storage AE.

4.2.3. Asynchronous Nature

Outstanding transactions are not supported. Transfer failures are addressed by the user and may be resent at any time before the study is archived.

4.2.4. Implementation Identifying Information

This implementation will be identified by:

Implementation Class UID is 1.2.840.1.10 for this version.

Implementation Version Name “DICOM Mach I”

Implementation Version Name is updated as necessary.

4.3. Association Initiation Policy

4.3.1 Configure Network

The configuration application does not require associations.
The DICOM Mach I application uses the Network Storage AE.

4.3.1. Proposed Presentation Context

Abstract Syntax		Transfer Syntax	
Name	UID	Name List	UID List
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Big Endian	1.2.840.10008.1.2.2
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian: Run-Length Encoding of pixel data	1.2.840.10008.1.2.5
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian: Baseline JPEG encoding of pixel data	1.2.840.10008.1.2.4.50
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian: Extended JPEG encoding of pixel data	1.2.840.10008.1.2.4.51
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian: Lossless JPEG encoding of pixel data	1.2.840.10008.1.2.4.57
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian: Lossless JPEG encoding of pixel data (psv=1)	1.2.840.10008.1.2.4.70

DICOM Mach I attempts to establish a connection with the SCP until the time-out has expired. If successful, an association for the Image SOP Classes established and the SCP the transfer begins.

4.3.2. SOP Specific Conformance of SCU

When a C-STORE response fails the application alerts the user. After the user acknowledges the error, the application continues sending the next image. The study file is not deleted and is available for re-send if necessary. No extended negotiation is attempted.

4.3.2.2 Storage SOP Class: Photometric Interpretation

Photometric Interpretation, i.e., color mode of the pixel image data, is not a negotiable parameter in DICOM 3.0.

This implementation lets the user configure the images to be exported as grayscale or color images.

Several image attributes are dependent on the configuration parameters for type, color, and size.

Image Type	Image Color	Image size	Photometric Interpretation	Bits/pixel
JPEG	Black & White	All sizes	RGB	24
	Color	All sizes	RGB	24
BITMAP	Black & White	All sizes	MONOCHROME2	8
	Color	25%	RGB	24
	Color	33%	RGB	24
	Color	50%	PALETTE COLOR	8
	Color	100%	PALETTE COLOR	8

4.5. Association Acceptance Policy

No associations are accepted by the Network Storage AE.

4.6. Communication Profile

This implementation supports TCP/IP Protocol stack.

5. Removable Media Interchange Specifications

This implementation does not support any media.

6. Data Identification Information

DICOM Mach I supports Study Instance UID, Series Instance UID and SOP Instance UID DICOM elements (0020, 000D), (0020, 000E) and (0008, 0018) in the IOD.

Unetixs UID root is 1.2.840.114347

The Study Instance UID is composed using the following convention:

1.2.840.114347.p.m.d

where

p = is the product number (1 for this implementation)

m = is the unique machine number

d = is the encoding of the current date and time

7. Extensions, Specializations and Privatizations

Not applicable.

8. Configuration

The DICOM Mach I configuration application sets parameters for remote and local DICOM Application Entities.

The parameters are:

AE identification, i.e., a descriptive name

Calling AE Title (for Aspen DICOM SCU)

Called AE Title (for a remote SCP)

TCP port number (for a remote SCP)

IP address or host name (for a remote host where the remote SCP resides)

Timeout for response from SCP

Image Format for photometric interpretation.

PDU Size

9. Support of Extended Character Sets

Additional character sets are not supported.